

Agri Energy Conference

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Michigan Soybean
Promotion Committee



✓ off


With Time Constraints...

- Quickly cover *details* to support *concepts*

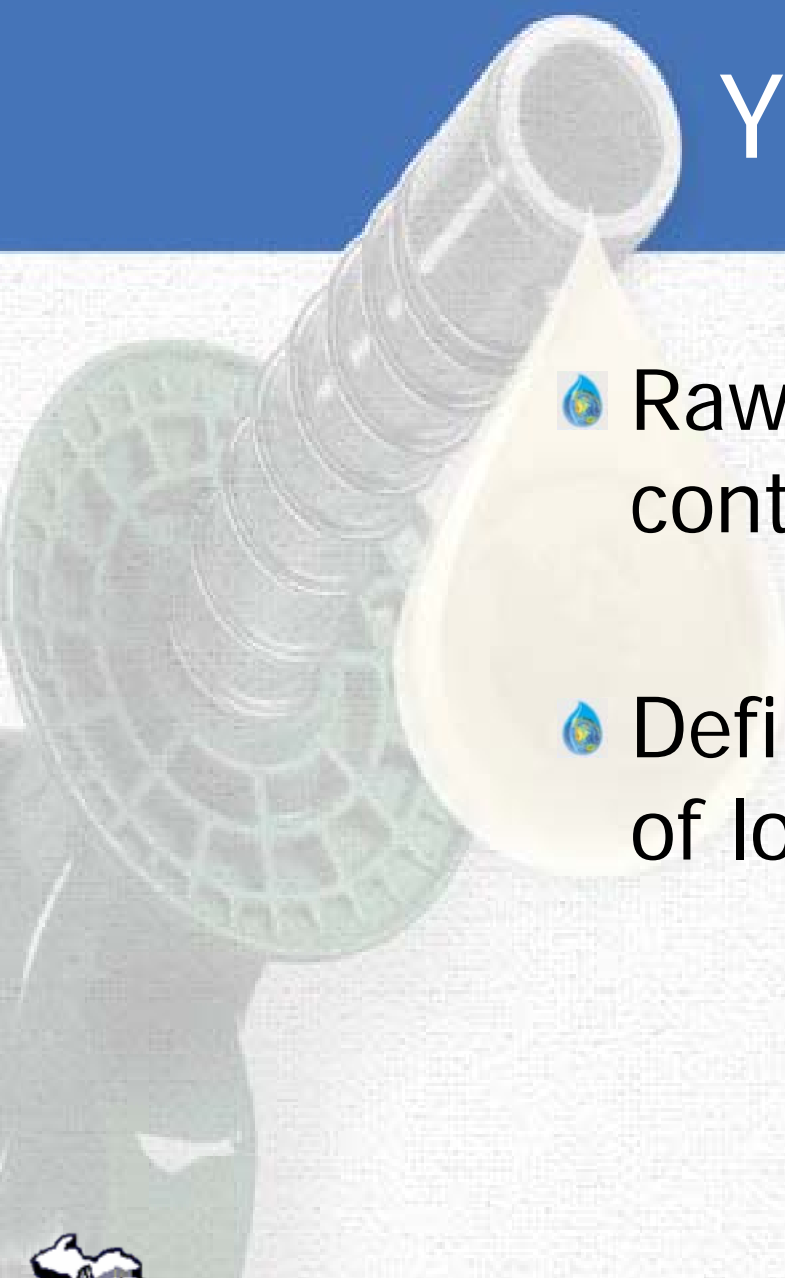
Reporting on behalf...

- 💧 12,000 Michigan soybean producers
- 💧 Over 2.0 million acres
- 💧 Production of 90 million bushels
- 💧 Create over 5,000 jobs
- 💧 Contribute over \$1 billion

Presently soyoil is biodiesel

- 
- 💧 Abundance
 - 💧 Price
 - 💧 *Functionality*
 - 💧 A direct result of Soybean Farmers Market Development over the last 15 years

You Understand...

- 
- 💧 Raw vegetable oil cannot be continuously used...
 - 💧 Definition: Mono-alkyl/esters of long chain fatty acids...



In Reality...

...taking a ***good*** fuel and
making it ***better***



✓ off

Beneficial Attributes of Biodiesel



State of Michigan


- ✓ People
- ✓ Environment
- ✓ Economy

Market Drivers (my definition)

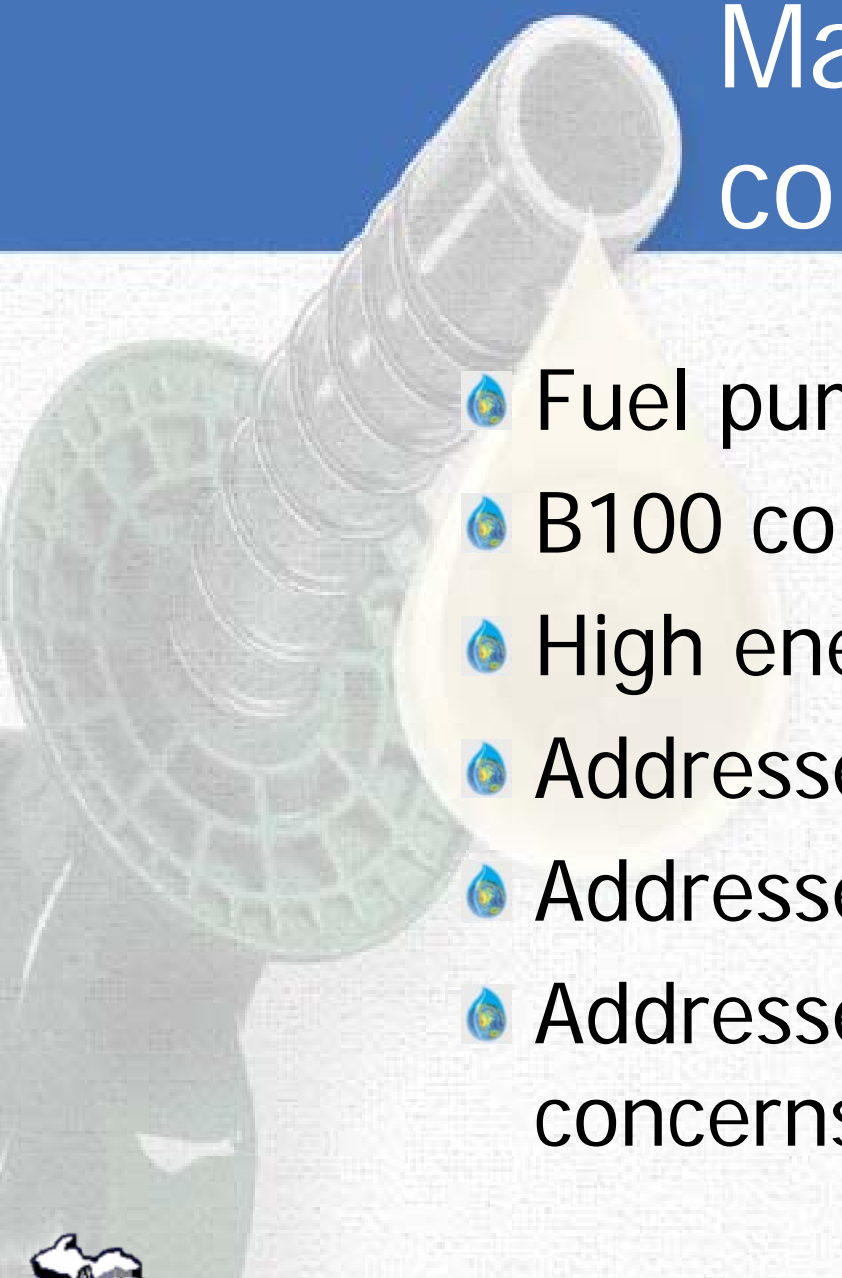
Characteristics enabling a product to penetrate a market

- Policy reasons
- Intrinsic value
- Financial value

Market Drivers...

- 
- 💧 Blending
 - Bxx
 - Easily splash blended
 - No “over” blending concerns
 - 💧 Little to no engine modifications
 - 💧 Use existing storage/dispensing facilitates
 - 💧 No delay/phase-in for use

Market Drivers continue...

- 
- 💧 Fuel pump lubricity enhancer
 - 💧 B100 contains no sulfur
 - 💧 High energy balance: 3.2 to 1
 - 💧 Addresses imported oil concerns
 - 💧 Addresses regulatory concerns
 - 💧 Addresses health/environmental concerns


Market Drivers (policy)



💧 EPACT 92 (amended in '98)

💧 Federal/State policies

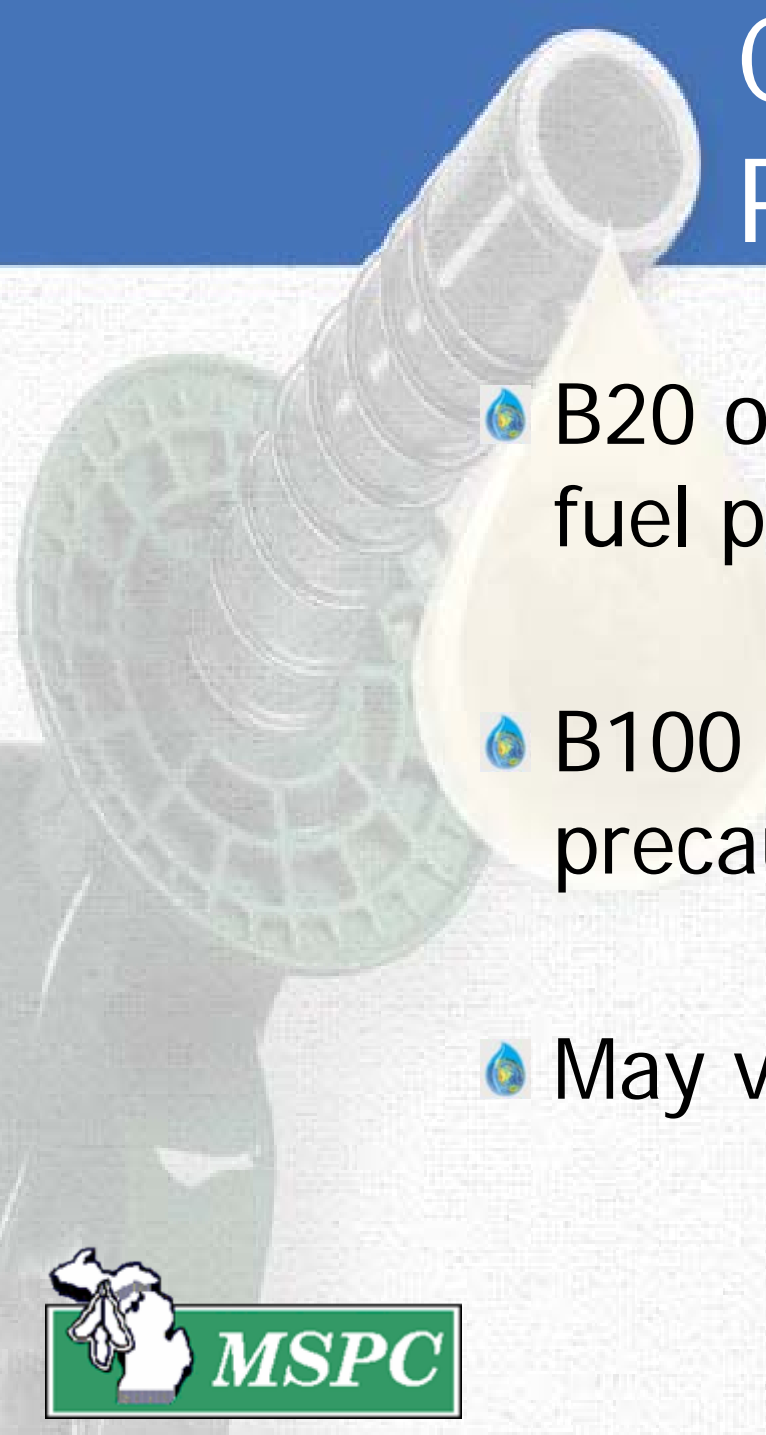
Awareness Issues...

- 
- ⚡ Engine/fuel warranties
 - ⚡ Bxx cold weather handling
 - ⚡ Quality assurance
 - ⚡ Clean storage facilities
 - ⚡ Older engine fuel filter


Engine Warranties:

- 💧 Parts and Workmanship
- 💧 Don't Warranty any fuel
- 💧 Generally a support statement of up to a B5

Cold Weather Performance

- 
- 💧 B20 or less determined by diesel fuel portion of blend
 - 💧 B100 winter storage needs precaution
 - 💧 May vary with “feedstock”

Fuel Quality

- 
- ASTM D6751 fuel standard since 2000
 - BQ 9000 voluntary fuel quality certification/accreditation program
 - Michigan has a diesel fuel quality testing program on “the books”

Environmental/Health Benefits

- 💧 Depending on Bxx levels, lowers CO, CO₂, PM THC, S
- 💧 Debate on emission levels of NO_x
- 💧 May help address clean air ozone rules and greenhouse gases
- 💧 ONLY alternative fuel to successfully complete EPA's Tier I and Tier II Health Effects testing

Present Michigan Use:

- 💧 50 Plus School Districts
- 💧 30 State/National Parks
- 💧 County Road Commissions
- 💧 State and Local Governments


Present Michigan Use:

- 
- 💧 Universities
 - 💧 Utilities
 - 💧 County Fairs Amusement Providers
 - 💧 Agriculture
(50% of farmers use Bxx)

Biodiesel Availability in Michigan

- Over 50 known retail pump fueling sites
- Over 110 known retailers
- Wholesale blending facilities available
- Biodiesel is produced in Michigan

Historical Perspective...

- 
- 💧 Soybean Growers interest began in 1992
 - 💧 National SoyDiesel board formed
(quickly became the National Biodiesel Board with Michigan a charter member)
 - 💧 Create a *demand* for an unheard product that provided a *limited supply*!

Historical Perspective Continued...

- 💧 Michigan literally received 5 gallon containers of B100 shipped via UPS
- 💧 Personally driven over 600,000 miles on Bxx, soybean owned pickup
- 💧 Estimated 9 million gallons B100 Michigan use in 2006

Historical Perspective Continued...

- Roughly 2X since 2000 and 3X in 2006
- Estimated 250 million gallons B100 U.S. use in 2006
- Soybean growers have invested \$60 million in “biodiesel”
- Approximately 1.5 billion Gallon U.S. production capacity (12/06)

Historical Perspective Continued...

- At least 100 plants built/being built (12/06)
- Involves Tyson, Smithfield, Kenosha, Perdue
- Oilseed processors
- As large as 100 million gallons

Market Development Needs...



Cooperative Biodiesel Involvement Needs

- ✓ Feedstock providers
- ✓ Auto manufacturer/OEM
(GM European *Lacetti* offering)
- ✓ Production/distribution quality
- ✓ Diesel fuel quality enforcement
(MW&M)
- ✓ Diesel engine promotion

Market Development Needs Continue...

- 
- Feedstock processing by-product market development
 - B20 ASTM standard finalized
 - Manufacturing research
 - Pipeline distribution
 - Truck stop availability
 - Fuel cloud/gel point needs
 - RFS with biodiesel definition

Beyond Soy Biodiesel...

- Estimated Soy Oil potential is 1 – 1.5 billion gallon of biodiesel production
- No silver bullets
- “Team” biodiesel approach (Beyond Soybean industry)

Beyond Soy Biodiesel Continue...



Defined parameters

- ✓ Environmentally/Health Friendly
- ✓ Renewable
- ✓ Biodegradable
- ✓ Domestically produced

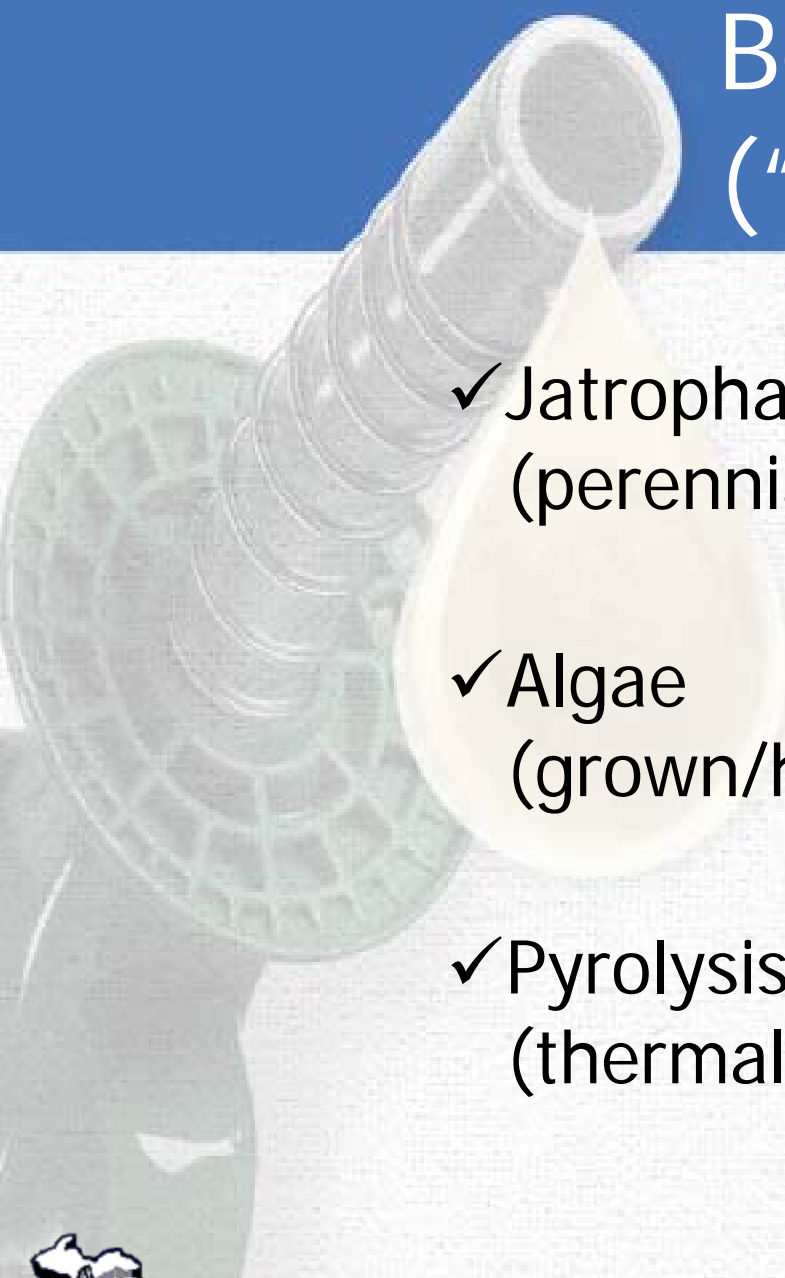
Beyond Soy Biodiesel Continue...

Feedstocks (more traditional)

- ✓ Designer Soybean oil
- ✓ Industrial hemp
- ✓ Corn oil from DDG
- ✓ Rapeseed/canola
- ✓ Yellow grease
- ✓ Trap grease
- ✓ Flax
- ✓ Sunflowers
- ✓ Camelina
- ✓ Cophea
- ✓ Animal fat
- ✓ Palm oil

✓ ????


Beyond Soy Biodiesel ("out-of-box" concepts)

- 
- ✓ Jatropha
(perennial "tree crop" producing seeds)
 - ✓ Algae
(grown/harvested for fuel production)
 - ✓ Pyrolysis of biomass
(thermally cracking of molecules)

Beyond Soy Biodiesel ("out-of-box concepts")

- ✓ Alteration of plant oil chemical composition for direct fuel application
- ✓ Altering plant metabolism for producing oil in leaves, stems as well as seeds
- ✓ ????

Soybean Office Facilitation

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- Remain an initial contact
 - Provider/facilitator of info
 - Biodeisel/biobased supplier list
 - Willingness to work with you